Lack of Relevant Information for Tumor Staging in Pathology Reports of Primary Cutaneous Melanoma

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Key Words: Melanoma; Staging; Pathology report

Abstract

For the T classification of primary cutaneous melanoma, the current American Joint Committee on Cancer staging (AJCC) system relies on tumor thickness and level of invasion. A new T classification has been proposed based on thickness and ulceration. The slides and reports of 135 departmental pathology consultations of patients referred to a major cancer center with a diagnosis of primary cutaneous invasive malignant melanoma were examined. Whether the outside pathology reports contained information on tumor thickness, level of invasion, and ulceration was recorded. Dermatopathologists had issued 76.3% of the reports and general surgical pathologists, 24.3%. Information provided was as follows: tumor thickness, 97.8%; Clark level, 71.9%; and presence or absence of ulceration, 28.1%. Of the 97 melanomas with no comment on ulceration, 17 were indeed ulcerated. Thus, the lack of a comment on ulceration cannot be equated with the absence of ulceration. The present study documents that many pathology reports on melanomas lack sufficient information for AJCC staging. Therefore, review of outside pathology material is necessary not only to confirm or revise the tumor diagnosis but also to provide clinicians with histologic parameters required for AJCC staging.

In addition to providing clinicians with a tissue diagnosis, a pathology report of a tumor also should contain information relevant for staging, since the latter determines prognosis and treatment options. For staging, most clinicians rely on the system of the American Joint Committee on Cancer (AJCC).1

The current melanoma staging system of the AJCC is complicated.1 Its T classification considers level of invasion and Breslow thickness, with the more adverse prognostic factor dominating to determine stage. Since ulceration has proved to be a more reproducible and reliable prognostic indicator than level of invasion, the AJCC has recently proposed a change to the melanoma staging system.2 The recommendation is that thickness and ulceration be the sole criteria for determining T classification. Thus, in the current classification, thickness and level of invasion, and in the proposed classification, thickness and ulceration are the histologic parameters relevant to primary cutaneous melanoma staging.

Most guidelines put forward by professional associations, committees, and/or experts in the field on pathology reporting of melanoma include documentation of histologic findings necessary for AJCC staging.3,4 However, little is known of the actual practice of pathologists in this regard. It was the purpose of the present study to determine how commonly pathologists provide information relevant to tumor staging in their melanoma reports.

To this end, 135 cases of primary cutaneous invasive malignant melanoma and the accompanying pathology reports of referrals to Memorial Sloan-Kettering Cancer Center, New York, NY (MSKCC), were examined. The slides were reviewed to confirm the diagnosis and to record prognostic parameters, including Breslow thickness, level of
invasion, and the presence or absence of ulceration. The outside pathology reports were then analyzed for diagnosis and for comments on staging parameters. Agreement or disagreement on staging parameters was recorded.

Materials and Methods

The slides and accompanying outside pathology reports of 135 consecutive cases with a diagnosis of malignant melanoma sent for review to the Department of Pathology, MSKCC, from September 1999 through April 2000 were retrieved. Only cases were included in which there was agreement between the outside report and the departmental review on the principal diagnosis of primary invasive melanoma. Cases of atypical nevi or other diagnoses, which on review at MSKCC were judged to be melanomas, were not included in the study. Likewise, reported melanomas, which on study at MSKCC were found not to be melanoma, as well as controversial melanocytic tumors, which by some were judged to be of uncertain biologic potential, were excluded from the study.

The slides were reviewed, as was the outside pathology report. After a diagnosis of malignant melanoma was made, tumor thickness was measured according to Breslow,5 the level of invasion was reported according to Clark et al.,6 and the presence or absence of ulceration (histologically assessed by the lack of an intact epidermis and exposure of dermal tissue to the skin surface) was recorded. Findings were then compared with those of the outside pathologist.

The staging parameters (thickness, level of invasion, ulceration) did not need to appear under the final diagnosis in the outside report for us to accept it as “information provided.” A microscopic description of ulceration or a description of how deep the melanoma extended was accepted as information provided. Likewise, the outside report did not need to state specifically the Clark level or level of invasion. For example, a statement “melanoma in epidermis, papillary and reticular dermis” was accepted as information provided. Likewise, the outside report was accepted as information provided. In all cases in which it was specified that ulceration was not present, it was absent. However, the lack of a comment on whether ulceration was present or absent was not equivalent to absence of ulceration. In 50% of the cases in which ulceration was found the corresponding pathology report failed to mention it.

In 89% of the cases there was agreement on the measurement of tumor thickness within a range of 20%. Differences in measurement of thickness affected staging and surgical management in only 3 cases (2.2%). Discrepancies in the assessment of Clark level were found in 11 (11%) of 97 cases in which the Clark level was reported. Staging or management (ie, eligibility for sentinel lymph node biopsy) was affected by these discrepancies in only 4 cases (4%). There was no discrepancy in the assessment of the presence or absence of ulceration. Whenever ulceration was said to be present, it was present. In all cases in which it was specified as absent, it was absent. However, the lack of a comment on the presence or absence of ulceration was not equivalent to absence of ulceration: 17 (17.5%) of 97 melanomas with no comment on ulceration indeed were ulcerated.

Of the 135 reports reviewed for this series, 103 (76.3%) were from dermatopathologists and 32 (23.7%) from general surgical pathology department.

For disagreement on a staging parameter to be recorded as such, the disagreement had to affect the actual staging. A difference in measurement of tumor thickness between 1.6 and 1.9 mm, for example, was not judged to be a significant discrepancy, because it did not affect T classification in the current or proposed AJCC classification system and had no effect on patient management. A different measurement of the Breslow thickness from 0.7 to 1.1 mm, on the other hand, had to be judged as a significant discrepancy, since it affected patient management: patients with tumors larger than 1 mm are candidates for sentinel lymph node biopsy at MSKCC. For disagreement on Clark level, any difference in number between the outside report and the MSKCC report was noted as a difference. If the outside report was equivocal, such as Clark II/III, and the tumor was found to be either Clark II or III at MSKCC, this was accepted as agreement with the outside diagnosis. A difference in the reporting of the Clark level was recorded as a significant discrepancy only if it affected staging or management. A discrepancy on ulceration was defined as any difference between the outside report and the review at MSKCC on the presence or absence of ulceration.

Results

The results on the reporting of tumor thickness, Clark level, and ulceration are summarized in Table 1. Of the reports, 97.8% provided information on tumor thickness; 71.9% of the reports provided information on the Clark level, but only 28.1% of the reports contained a comment on the presence or absence of ulceration. In 50% of the cases in which ulceration was found the corresponding pathology report failed to mention it.

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Table I

Reports With Comments*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No. (%) of Reports With Comment on Parameter</th>
</tr>
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<tbody>
<tr>
<td>Thickness</td>
<td>132 (97.8)</td>
</tr>
<tr>
<td>Clark level</td>
<td>97 (71.9)</td>
</tr>
<tr>
<td>Ulceration</td>
<td>38 (28.1)</td>
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</tbody>
</table>

* N = 135.
surgical pathologists. All 3 reports that lacked measurement of tumor thickness were from board-certified dermatopathologists. Of the dermatopathologists, 33% did not specify the Clark level, whereas only 12% (4/32) of the general surgical pathologists failed to provide information on the Clark level. Of the 97 reports, 14 (14%) that lacked information on the presence or absence of ulceration were issued by general surgical pathologists (40% of surgical pathologists did not comment on ulceration), and 83 (86%) were from dermatopathologists (82% of dermatopathologists did not comment on ulceration) (Table 2). Of the 17 melanomas in which the ulcer was not documented in the report, 14 (82%) were reviewed by dermatopathologists and 3 (18%) by general surgical pathologists.

According to the current AJCC system, which relies on thickness and Clark level, 30% of pathology reports lacked sufficient information. If the proposed AJCC staging system were to be used, which relies on thickness and ulceration, approximately 70% of the melanomas could not be staged reliably based on submitted pathology reports alone (Table 3).

**Discussion**

The staging system for melanoma according to the guidelines proposed by the AJCC in 1992 have been in practice for almost a decade and have been widely accepted. The criteria for the classification reflected what were believed to be the most relevant histologic parameters for prognosis at the time. However, in the meantime, the prognostic value of many histologic parameters, such as the Clark level, has been questioned.

In several recent large studies that analyzed the prognosis of patients with stage I and II melanoma, Breslow thickness and ulceration were the strongest predictors of outcome. Therefore, the AJCC recommended for cutaneous melanoma that tumor thickness and melanoma ulceration as determined by histologic examination be the sole criteria for determining T classification. Based on a study by Buttner et al, as well as the results from the University of Alabama/Sydney Melanoma Unit database, the optimal cutoffs for tumor thickness were less than 1 mm, 1 to 2 mm, 2 to 4 mm, and more than 4 mm. Apart from thin melanomas (<1 mm), the Clark level added little prognostic information.

For the AJCC classification to become useful, it is important for the clinician to receive all relevant pathologic staging information from the histopathologist. This review of melanoma pathology reports demonstrates that many reports lack sufficient information for adequate staging: slightly more than 30% of the reports lacked sufficient information for staging according to the current AJCC criteria. If the proposed AJCC staging system were to be used, approximately 70% of the melanomas could not be staged adequately based on submitted pathology reports alone.

Although the majority of outside pathology reports came from the greater New York metropolitan area and may reflect regional sample bias, our experience with pathology reports from other parts of the United States suggests that insufficient staging information is a nationwide phenomenon. The extent of the phenomenon is surprising, since several published guidelines for the reporting of melanoma have suggested a more comprehensive list of histologic parameters than the minimal criteria needed for tumor staging.

It is of interest that general surgical pathologists were more likely to provide all staging parameters than dermatopathologists. One possible explanation is that general surgical pathologists are routinely asked by surgeons and oncologists to comment on staging parameters of a number of different tumors. As a matter of routine they more likely may follow staging guidelines for all major tumors, including melanoma. Many dermatopathologists, on the other hand, are dermatologists by training. Commenting on tumor stage may not be as routine to them as it is to surgical pathologists. It is also of interest that the chapters on melanoma in several major textbooks of dermatopathology fail to provide information on or discuss pathologic staging of melanoma, while the chapter on skin tumors in the leading textbook of surgical pathology presents and discusses the AJCC and other staging systems.

The results of the present study document that many pathology reports of melanoma lack sufficient information for staging. Review of outside pathology material is therefore not only a good quality assurance practice to verify or revise a tumor diagnosis before a patient undergoes treatment but it is also often necessary to provide clinicians with...
essential information for staging not previously specified by pathologists.

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References


